



PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Improvements in and relating to the production of Foodstuffs

We, J. LYONS & COMPANY LIMITED, a British Company, of Cadby Hall, London, W.14, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to the production of food stuffs, and more especially to the production of portions of finely divided meat or the like formed into a thin slice; such slices are suitable, for example, for use in the preparation of hamburgers, in which the meat portions are fried or grilled and served between toasted split rolls. It is convenient to refer to such a portion of meat as a patty.

The present invention is concerned with an improved process of and apparatus for the production of meat patties, suitable for this use, and the invention consists of a process for the production of a meat or the like patty, which comprises chilling the meat to a temperature below freezing point finely dividing the meat whilst still at low temperature by a cutting operation, and forming the finely divided and still cold meat into a patty.

The invention also includes an apparatus for the production of meat or the like patties, which comprises a rotating knife device for finely dividing the meat which is chilled to a temperature below freezing point, and means directly associated with the knife device for forming the finely divided meat into patties.

By the phrase "directly associated with", we mean that there is little or no delay in the time taken for the finely divided meat, on leaving the knife device, to reach the moulding device; thus any rise that may occur in the temperature of the meat during its passage between the two devices is reduced to a minimum.

Other features and advantages of the invention will appear from the following description of one embodiment thereof, given by way of example, in conjunction with the drawing

accompanying the provisional specification, which is a diagram showing the arrangement of a suitable apparatus that can be used in carrying out a process in accordance with the invention.

According to one form of the invention, meat is removed from cold storage, and whilst still chilled is cut finely by means of apparatus consisting essentially of knives. In this process the temperature of the meat is not permitted to rise unduly, and most desirably is kept below freezing point. By means of a suitable apparatus the chopped meat is then formed into portions of the desired shape and size, the portions being then stacked one over the other, preferably with interleaving sheets of paper. The stacked portions can then be passed through a suitable freezing apparatus to reduce the temperature to one at which the portions can be stored for an extended period.

In this process, the use of knives for effecting the initial chopping of the meat into small portions has the advantage over, for example, the use of a mincing type machine for the reason that with the latter machine the energy expended in operating the mincers results in a substantial increase of the temperature of the meat. If the meat is allowed to rise in temperature substantially and especially if, as may sometimes occur, it is permitted to rise approximately to room temperature, then appreciable difficulty is encountered in chilling the portions for storage. It is found necessary to retain the cut and stacked portions in some way, to avoid "freeze-burning" of the portions.

The drawing accompanying the provisional specification shows in a diagrammatic form an apparatus that can be used for carrying out the process in accordance with the present invention, and itself constitutes a feature of the present invention. In this apparatus, meat 1 from cold store is delivered to a hopper, or, as shown a conveyor table 2, where it is initially chopped by a reciprocating knife 3 driven by any suitable means, indicated diagram-

matically at 4 as an eccentric. The temperature of the meat at this stage may be, for example, in the region of 25° F or a little lower. At this temperature the meat is firm and can easily be cut by a knife such as 3 and provided that the knife is sharp the energy expended on the meat in cutting it is small and the temperature rise on passage past the knife may amount to only a few degrees.

The cut meat falls from conveyor 2 into a bowl and knife type cutter. This includes a bowl 5 having a shape that is partly toroidal, mounted on a suitable driving shaft 6. At one point around the bowl is arranged a high speed multi-blade cutting knife 7, mounted on shaft 8 and rotatable close to the surface of the bowl; the knife is arranged within a casing 9. By this means the meat is now reduced to a finely chopped condition and again provided that the knives 7 are maintained sharp this cutting can be effected without substantial temperature rise of the meat. At a suitable position round the bowl of the cutter, a deflection blade or scoop 10 can be interposed as desired, to cause the cut meat to be delivered over a guide blade 11 into the hopper 12 of a forming machine, either directly or by means of a bucket elevator 13, as suitable, depending upon the disposition of the cutter and the forming machine.

The chopped meat in hopper 12 falls under gravity into a feed screw device 14, which delivers the meat into a rotary mould mechanism 15. The feed screw is driven by means of a variable speed drive not shown and is arranged to permit slip back of the chopped meat along the screw, should over feed tend to occur. Mechanism 15 includes a frame member mounted on a suitable shaft 16 and carrying a series of plungers 17, arranged radially of the mechanism 15 and axially movable by means of a fixed cam assembly 18. As the frame rotates, the plungers are reciprocated; as each plunger is brought adjacent the end of the feed screw mechanism 14, the plunger is drawn radially inward of the frame leaving at the periphery of the frame a small recessed pocket defining a space into which the chopped meat is fed. The frame is rotated and at a position at 19, the plungers are moved slightly outwardly, thereby to cause the surface of the meat patty formed within the mould receptacle to engage the bottommost of a pile of papers 20 contained within a container 21. The frame progresses in movement until at the bottom position at 22, the plungers are caused to be moved radially outward a further distance until the face of the plunger is approximately level with the surface of the frame. A scraper 23 engages the frame at this point ensuring that the meat patty, with the paper adhering to it, falls on to an intermittently operated conveyor 24, forming a stack 25 of portions with interleaved papers. While the conveyor 24 can be driven by any suitable

means, it is convenient if driving pins 26, appropriately spaced round the framework of the mould mechanism 15, are used to advance the conveyor, thus ensuring that there will be a regular number of portions in each stack.

The stacks of patties will consist of meat still at a low temperature, and in practice below 32° F. While in this condition it is feasible for the stacks of patties to be passed directly to a cold temperature chamber, where their temperature is reduced to below zero degrees F. Provided that the temperature of the portions is sufficiently low when the patties are passed into the cold temperature enclosure, it is found that "freeze-burning" of the patties is avoided. This is an important practical advantage, and is much to be preferred to an arrangement in which the process of treating the meat to form the patties results in the meat being elevated in temperature to that approaching an ambient temperature, when it is found that additional precautions must be taken if "freeze-burning" is to be avoided.

WHAT WE CLAIM IS:—

1. A process for the production of a meat or the like patty, which comprises chilling the meat to a temperature below freezing point, finely dividing the meat whilst still at low temperature by a cutting operation, and forming the finely divided and still cold meat into a patty.
2. A process in accordance with claim 1 wherein said process is completed whilst the temperature of the meat is maintained at freezing point or below throughout the process.
3. A process in accordance with either of the preceding claims, which comprises finely dividing the meat by a rotating knife device.
4. A process in accordance with any of the preceding claims, and comprising the step of initially roughly cutting the meat by a knife means.
5. A process in accordance with any of the preceding claims, and comprising delivering finely divided meat to a moulding device, to form a succession of patties, and stacking the formed patties with interleaving separators.
6. A process in accordance with any of the preceding claims, and comprising passing the formed or formed and stacked patties directly to a freezing means, without substantial rise of temperature after forming.
7. An apparatus for the production of meat or the like patties, which comprises a rotating knife device for finely dividing the meat which is chilled to a temperature below freezing point, and means directly associated with the knife device for forming the finely divided meat into patties.
8. An apparatus in accordance with claim 7, wherein said knife device comprises a bowl that is partly toroidal, the knife rotating close to the surface of the bowl.

9. An apparatus in accordance with claim 8, and comprising means for delivering finely divided meat from the knife device to a patty forming means.
- 5 10. An apparatus in accordance with any of claims 7 to 9, wherein said patty-forming means comprises a rotatable support, moulding recesses in the surface of said support, said recesses being each defined, in part, by a
- 10 movable plunger or the like and comprising means for pressing meat into a recess and for thereafter moving said plunger to discharge the moulded patty from the recess.
- 15 11. An apparatus in accordance with claim 10, and comprising a series of such recesses and plungers and a common cam mechanism for moving said plungers in turn.
- 20 12. An apparatus in accordance with claim 10 or 11, and comprising a screw-type feeding means for pressing meat into said recesses.
13. An apparatus in accordance with claim 12, and comprising means for preventing over feeding by said screw means.
14. An apparatus in accordance with claim 11, wherein each said plunger is moved, before the formed patty is discharged from the associated recess, towards a paper or like sheet, to cause the sheet to adhere to the surface of the patty.
- 30 15. An apparatus in accordance with claim 14, wherein the patties are stacked as they are discharged from the forming means, with the sheets interleaving them.
16. An improved process for the preparation of meat patties, substantially as described.
- 35 17. An improved apparatus for the preparation of meat patties substantially as described with reference to the drawings accompanying the provisional specification.
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1 SHEET

PROVISIONAL SPECIFICATION

*This drawing is a reproduction of
the Original on a reduced scale*

